

VANCOUVER CITY COLLEGE

Reports of Explorations,

1864-1865.

TO GOVERNMENT OF BRITISH COLUMBIA.

UPPER COLUMBIA RIVER.

(Extract from Mr. Moberly's Report, Nov, 15, 1866.)

I was detained two days at Wild Horse Creek, before I could get any horses, but on the evening of the 26th having succeeded in hiring three wretched Indian horses, I left on the 27th, on my return journey to Gold River, *via* the valleys of the Kootenay and Columbia Rivers, and reached Kirby's Landing on the 13th September, having in that time explored the valley of the Kootenay River, from Wild Horse Creek to a point $1\frac{1}{2}$ miles south of the source of the Columbia River; and the valley of the latter from its source to the mouth of Gold River. As my Journal, accompanied with a map of the route followed by me, which I now forward, will contain full information of this part of the country, I shall give only a general outline in this Report.

The Kootenay River, from Wild Horse Creek to within $1\frac{1}{2}$ miles of the source of the Columbia River, a distance of about 48 miles by trail, flows through a fine valley, with extensive meadows on the bottom, and flats and benches on either side, covered with very fine bunch grass, and generally timbered with scattered red pine and larch of a large growth. The timber gets much thicker as the Columbia Lake (source of the Columbia River) is approached. I followed the trail along the left or easterly bank of the Kootenay River until I reached the ford, which is directly south of Columbia Lake. We found the water in the main channel about 4 feet in depth, but had no difficulty in fording it on horseback. On the northerly side of the ford, a low flat covered with bunch grass and scattered red pines, extends for about $1\frac{1}{2}$ miles to the Columbia Lake. This lake is about 8 miles in length, and is the true source of the largest river that falls into the Pacific Ocean on its easterly side. From the source of the Columbia River to Kinbasket's Crossing, in Latitude $50^{\circ} 47' 4''$, a distance of about 48 miles, I followed along a very good natural trail on the easterly or right bank of the Columbia River. I shall not describe this portion of the above valley in detail, as it is already well and most accurately described in Dr. Hector's Journal of 1860, which is published in Captain Palliser's Report of his exploration in British North America. The only points in which we disagree are our longitudes, neither of which can be relied upon accurately; Captain Palliser's and Dr. Hector's, for the reasons given in their Reports, and because we know that the longitude of Fort Shepherd, as given by Captain Palliser, does not agree with

that of the Boundary Commission under the command of Col. Hawkins, R. E., which must be very reliable. My longitudes are simply based on the distances travelled from a known longitude, corrected by the different courses and latitudes taken at many points. The point from which I base mine is the mouth of Jordan Creek, which was determined by Mr. Leach in 1865.

Mr. Turnbull and myself agree almost exactly in our longitudes of the mouth of Toby Creek, No. 2, he taking his starting point from a fixed point on the Boundary Line, where it crosses the Kootenay Bottom, south of Kootenay Lake.

The benches and flats along the easterly bank of this portion of the Columbia River are generally covered with bunch grass, but the timber grows much more plentifully than on the valley of the Kootenay River north of Wild Horse Creek. On the opposite bank of the Columbia River there is not so much bunch grass and more timber. It is my impression that portions of the valley of the Kootenay River, between Wild Horse Creek and the source of the Columbia River, as possibly also portions of the latter valley, south of Kinbasket's Crossing, will ultimately support a considerable agricultural and pastoral population.

In travelling in a northerly direction from Wild Horse Creek, the valleys of the Kootenay, the Columbia to the Boat Encampment, and the Canoe Rivers, appear continuous. There is a marked difference between the character of the Rocky Mountains to the eastward and that of the Selkirk and other mountains to the westward of the above valley; the Rocky Mountains being a succession of high, rugged, broken and rocky peaks, the others being more rounded and generally thickly timbered to their summits, except where covered with perpetual snow.

The valley of the Columbia, north of Kinbasket's Crossing, changes very rapidly; it becomes much narrower, the bunch grass disappears altogether, except on a few spots on the east bank between the above crossing and the mouth of Kicking Horse River; and the banks of the river and mountain sides are covered with a thick growth of timber.

The Columbia River from its source to Kinbasket's Crossing is too shallow in the lower stages of the water for steamboat navigation. From Kinbasket's Crossing to the Slate Canon, a distance by river of about seventy-four miles, I consider good steamboat navigation, although in low water some of the bars will probably be rather shallow. I think a steamer could get through the Slate Canon, but the rapids from two to four miles below it are shallow and full of boulders, though not of large size, and I do not think they are navigable. Thence, for a distance down the river of about twenty-five miles, there is good navigation, but it is again impeded by a series of rapids and small falls, some five or six miles in length, which are quite unnavigable. Thence to the northern end of Kinbasket Lake, a distance of about fourteen miles, the navigation is good. From the latter point to the Boat Encampment, a distance of about twenty-two miles, is a series of rapids and riffles, many of a very bad description, and not fit for steamboat navigation.

From the Boat Encampment to the Dalles de Mort, a distance of forty-seven miles, may be considered as navigable, although there are three or four bad rapids where lines would be required.

I saw indications of coal below the Slate Canon, but nothing led me to believe that any extensive vein exists there. From the Slate Canon to the Boat Encampment, I saw some very fine slate bed-rock,

very similar to that on Antler Creek; and on the easterly side of the river, between these two points, the mountains appeared generally to be of a slate formation; they also extend up the easterly side of the Canoe River, bearing, as far as I could judge, N. 15° W. After leaving the Boat Encampment, I did not see any appearance of slate until I got within a few miles of the mouth of Gold River.

(Extract from Mr. Moberly's Diary, 1866.)

Monday, August 27th.—Left Wild Horse Creek, and reached a creek about 18 miles from it, on trail on the east or left bank of the Kootenay River. The trail to-day was for the most part of the distance over flats and benches which are timbered with scattered red pine, larch, &c., and the whole covered with a growth of bunch grass. On the low flats on both sides of the river are extensive meadows of swamp grass, and a good deal of land well adapted for agricultural purposes. The valley between the Rocky Mountains and those to the westward of the Kootenay River is from 3 to 5 miles in width, and the Kootenay River as seen from the trail appears a fine, placid stream, with a current of about 1½ to 2 miles per hour.

Tuesday, August 28th.—Travelled about 24 miles to-day, still following trail along east bank of the Kootenay River, which passes along some side hills and flats, and is much more broken than that passed over yesterday. Rich bunch-grass the whole distance; more thickly timbered, and not so well watered, after crossing Sheep Creek, as it is south of that creek. I did not see any appearance of an opening through the Rocky Mountains to the eastward, the whole distance from Wild Horse Creek to the point reached to-night.

Wednesday, August 29th.—At about a distance of four miles from last night's camp, I reached the ford across the Kootenay River, which we crossed, and found the water in the main channel of river, which flows through gravel flats, about four feet in depth. Crossing this ford, we followed a trail over a low flat, covered with bunch-grass and scattered red pine, about 1½ miles wide, and found ourselves at the south-east corner of the Columbia Lake, which is the real source of the Columbia River, and from this point to its mouth its length is about 1,200 miles. There appears to be very little difference between the level of the Kootenay River, at the ford, and that of the Columbia Lake. I was unable to get the latitude here, as the sky was covered with clouds. At the head of the Columbia Lake there is much marshy ground. I followed the trail along the easterly side of lake, which passes over rocky bluffs at both ends of lake; the height gained on the bluff at south end of lake being about 500 feet above its level; the other portions of this part of the trail are generally on high benches; bunch-grass all the distance; timber, scattered red pine, fir, &c. Reached a point about 1 mile north of lower end of lake, and camped at a small stream where there was a large encampment of Kootenay Indians, who were engaged curing salmon, which are caught in great abundance here, but are very poor and coarse, and gave me the idea of all being worn out fish. Paid off Indian that packed my supplies, &c., from Wild Horse Creek, and hired three more horses from the Indians here, who had a band of 300 or 400 head, some of which were tolerably good horses.

Thursday, August 30th.—Having taken the latitude of this camp, which I made 50° 19' 55" N. (the observation was not good and could not be accurately relied upon) I started at 12.30 and travelled some 10 or 11 miles, where I camped. The whole distance travelled to-day was

along a very good trail, which generally passed over flats and benches. There were a few unimportant side hills on this portion of the trail. Fine bunch-grass covered all the flats, benches, and side hills. The river bottom is wide, and there is much flooded land, which I see is shown on Capt. Palliser's map (in part) as a lake, and may, perhaps, be considered in that light. This portion of the valley varies from 3 to 5 miles in width, and there is not any break in the mountain ranges on either side of it, except where a small creek (Toby's Creek, No. 1) falls into it on its westerly side, at the north end of the Columbia Lake. This evening the weather was very cold, and there was a strong north wind blowing.

Friday, August 31st.—Left camp at 9 a.m., and travelled about 23 miles, where we camped on a stream, through the valley of which the Indians tell me there is a good trail, at a low elevation, through the mountains to the eastward. It would therefore lead into the Vermillion Pass. The trail passed over to-day runs along several steep side hills; a fine growth of bunch-grass the whole distance. The timber begins to grow more plentifully than on that portion passed over yesterday. A large creek (marked on our official maps and named Toby's Creek, No. 2) falls into the valley of the Columbia from the westward, about $50^{\circ} 32' 00''$ N. It is by the valley of this creek that the old Indian trail (Kinbasket's trail) to the head of Kootenay Lake was opened, and I was in hopes to have met with or heard of Mr. Turnbull here, who is exploring this line. I, however, could hear nothing about him. According to the latitude given by Dr. Hector, the trail leading into the Vermillion Pass is about three miles south of the mouth of Toby Creek, No. 2. Two families of Indians overtook me to-day, and I got some information from them about the country. They tell me that on the flats on either side of the upper Columbia, the deepest snow does not exceed six inches in depth, and that their horses winter there very well. This was in part corroborated by several houses at different points along this trail that I saw, and which had been built by stock owners who had wintered large bands of cattle and horses there a year or two previous to this date. The upper Columbia Indians do not grow potatoes, nor do they cultivate any land; but I could not clearly make out if they grow potatoes on the Kootenay River, between the source of the Columbia River and Wild Horse Creek, but I think not.

Saturday, September 1st.—Left camp at 9 a.m., and reached Kinbasket's crossing at 10.40 a.m. I here paid off the Indian that packed my supplies from the Columbia Lake, and, having taken the latitude of this crossing, which I made $50^{\circ} 47' 03''$, I put all my supplies into a small log canoe, and ran down to Kinbasket's fishing station, about $2\frac{1}{2}$ or 3 miles further down the river, where we found about 15 Indians employed drying salmon, which are caught in large quantities here. These Indians are a portion of the Shuswap tribe (from Little Shuswap Lake), and settled here about 20 years ago. The banks of the Columbia River are low and swampy, and immediately adjoining the river are covered with a dense and almost impenetrable growth of willows, crab-apple, and other bushes. The water in the river is of a dirty, whitish color, owing to its flowing through a country where many of the banks of the river are composed of calcareous mud. The character of the valley from this point changes rapidly, the mountains on both sides of the river rising almost from its banks, and generally covered with a dense growth of timber and brushwood, and the bunch-grass

almost entirely disappears. The following information I obtained from Kinbaskit, the chief of the Shuswaps, who is the most intelligent Indian I have met with, and from what I saw of the country both before and after he left me, has a thorough knowledge of the country from Wild Horse Creek to the Boat Encampment, and thence to Colville. He says there is a good trail through the Rocky Mountains by the valley of a creek about 3 or 4 miles south of his fishery; also one by a valley which, by his description, must be the valley of the Kicking Horse River, described by Dr. Hector. He also says he has taken horses up the valley of Toby Creek, No. 2, nearly to its source, and then leaving them has passed on foot over a high divide to the head of Kootenay Lake; (this is the line Mr. Turnbull is now exploring). It is his opinion that there is not any low divide through the Selkirk Range, with the exception of one from the mouth of the Bushey River, in latitude $51^{\circ} 44' N.$ to the middle fork of Gold River. He has taken horses down the right bank of the Columbia River to the southerly end of Kinbaskit Lake, and thence over the mountains to Jordan Creek, from which point he followed the Indian trail (described by me last year) to Seymour. This trip, however, took him several months to perform.

Sunday, September 2nd.—Remained at Kinbaskit's camp, and after much trouble, succeeded in purchasing a very bad bark canoe to make the trip down to the mouth of Gold River. Took latitude, which is $50^{\circ} 49' 40'' N.$ Weather very cold at nights.

Monday, September 3rd.—After mending canoe, I left camp at 12.30 p.m., and ran about 5 miles down the river, where we were obliged to land and camp to repair our canoe.

Tuesday, September 4th.—Having repaired the canoe, I left camp at 1.30 p.m., after taking the latitude, which I made $50^{\circ} 54' 32''$, and we ran down about 10 miles, when we met three canoes filled with Indians. I therefore stopped for the night to see if I could get a good canoe from them.

Wednesday, September 5th.—After much trouble, I succeeded in getting a tolerably good canoe from these Indians, and ran about 10 miles further down the river, when we were again obliged to land and patch and pitch our canoes. I took the latitude at this point, which I made $51^{\circ} 04' 02'' N.$, and Kinbaskit pointed out to me a low place in the mountains to the eastward, some 800 feet in height, over which he says horses can be taken into the Vermillion Pass. Having mended the canoes, we started and ran about 10 miles further down the river, and then camped. There is much low, flooded land immediately adjoining the banks of the river, and many sloughs.

Thursday, September 6th.—Ran down to the mouth of Kicking Horse River, where I took latitude, which is $51^{\circ} 18' 19'' N.$ I then proceeded down the stream and camped at the mouth of a creek that falls into the Columbia River on its easterly side, about 6 miles below the mouth of Blaeberry River. The Indians tell me that the valley of the Blaeberry River affords the best pass through the mountains to the eastward (see Dr. Hector's Report). They say the mountain sheep abound on the mountains south of this river, and the cariboo on those north of it, but that the latter is not found south of the mouth of Kicking Horse River; also, that the large salmon (white) do not go further up stream than the Kicking Horse River. The banks of river are now covered with a dense growth of pine, cedar, spruce, fir, birch,

&c. Road building along the right bank of the Columbia River, from its source to this point, will be comparatively easy.

Friday, September 7th.—Left camp at 7.30 a.m., and almost immediately got into a canon where the stream is in many places very rapid and narrow, and the rocks of a slate formation. I think at the stage the water was at when I passed here that a steamer could get through this canon, but the rapids a short distance below, and which extend some 3 or 4 miles in length, are in many places shallow and full of boulders, and I fear unnavigable. I stopped at the mouth of a large creek which falls into the Columbia on its westerly side, in latitude $51^{\circ} 31' 30''$ N. The Indians say a trail from Gold River might strike the Columbia at the mouth of this creek, but it would have to be taken over much higher ground than if brought to the mouth of Bushey River. They tell me that the south branch of this stream heads near the north branch of the Spille-mu-chem River, and that the divide between these two streams is low, and would afford a very level line for a trail. Should a trail or road be opened along the east or right bank of the Columbia, it should leave the banks of the main river immediately above the Slate Canon and, passing through a low valley, strike the main river at a point nearly opposite the mouth of the Bushey River. Timber about the same as on that portion.

Saturday, September 8th.—Ran down to the mouth of the Bushey River, and then crossed over to the opposite side of the Columbia, where I stopped at the mouth of a large stream, about $\frac{3}{4}$ of a mile below the mouth of Bushey River; I here took the latitude, which is $51^{\circ} 44' 45''$ N. From the mouth of this stream there is a low valley running in a south-easterly direction to the head of the Slate Canon. About $1\frac{1}{2}$ miles north of the point where I took the latitude, we came to the head of some very bad rapids (the worst on the Columbia River), which we afterward ascertained extended some four miles in length. There is a trail from the head of these rapids to the lower end of the worst of them. I had my instruments and books packed over this trail and took the canoes down by the river. After five hours hard work, most of the time in the water, we succeeded, after packing, poling and lowering the canoes over the falls and riffles, in reaching the end of the trail before referred to; we ran about a mile below this point, and camped on the right bank of river. The rocks here are generally of a slate formation. Many steep side hills and some rock would probably be encountered in building a road along the east bank of the river; but it might possibly be kept on some high benches that I only partially examined. Timber same as before.

Sunday, September 9th.—Having again repaired the canoes we left camp at 9:30 a.m., but in running a rapid about $\frac{1}{4}$ of a mile below camp, my canoe was thrown on some rocks and much injured, and the other canoe, which was immediately behind, ran into mine and broke about two feet off her bow; we filled up the holes with blankets and ran down to the south end of Kinbasket Lake, where we repaired them and I took the latitude, which is $51^{\circ} 54' 36''$ N. We then proceeded to the lower end of Kinbasket Lake and camped. This lake is about 8 miles in length, and there are many shoals at the upper or south end of it; we did not pass any bad rapids to-day. The mountains on both banks are high and the shores rocky. On the easterly side of the lake the mountains are composed of slate. The Indian trail from the mouth of Jordan Creek, terminates at the entrance of a low, narrow valley, through which a stream flows. At the southwesterly end of this lake,

a large stream also falls into Kinbasket Lake, at its southeasterly corner, and the Indians tell me there is coal a short distance up it. Dense woods covered the banks of river and mountain sides all the distance travelled to-day.

Monday, September 10th.—Left camp at 8 a.m., and immediately at the foot of lake we encountered rapids that extended the whole distance, 9 or 10 miles, travelled to-day. It might be possible at a high stage of water to get a steamer over these rapids with lines, but now they are too shallow, and there are many boulders which are not covered with water. The mountains on both sides of river are high and steep, and road building along the most of this portion of the valley would be expensive. I walked the whole distance travelled to-day and the Indians ran, dropped and portaged the canoes over the rapids, &c., and were most of the day in the water.

Tuesday, September 11th.—Started at 7 a.m., with the intention of running to the Boat Encampment and getting the latitude, and then proceeding on to Wilson's Landing, but I unfortunately lost my protractor and was obliged to go back for it, which delayed me for two hours, and I did not reach the above place until 1 p.m. I therefore camped, as I was anxious to determine the latitude of this place accurately. The whole distance travelled to-day was a succession of rapids, and about $\frac{3}{4}$ of a mile from the junction of the Columbia with the Canoe River is a canon, through which the water runs at a very rapid rate. A bridge might be thrown across at this place. The Boat Encampment, which is on the angle formed by the Columbia and the river that flows from the Athabasca Pass, is a point I think destined, before very long, to become of some importance, as it is the confluence of three large rivers, and is the terminus of the Athabasca Pass. There is a good deal of level land all around it, and the mountains to the eastward are of a slate formation. The color of the water of the Canoe River is a dark, muddy brown; that of the Columbia River, and also of the large tributary flowing from the Athabasca Pass, of a dirty, whitish color. The junction of the Canoe with the Columbia River is the most northerly point of the latter.

Wednesday, September 12th.—Took the latitude of the Boat Encampment, which is $52^{\circ} 7' 31''$ N., and then ran down the river about 25 miles and camped. The current of the river for the seven miles immediately below the Boat Encampment is very swift, and will probably average 7 miles per hour; there are several rapids on this portion of the river. For the next 18 miles the current is not so rapid, and will probably not average more than $4\frac{1}{2}$ miles per hour. There are two good places for bridging the river some three miles below the Canoe River, the Columbia at those two points being about 120 and 175 feet in width; thick growth of timber on both sides of river. The easterly bank of river best for a road, as with the exception of two short points of rock, a road can be carried over low flats and benches the whole distance. The opposite side does not offer any serious obstacles to road building, but to construct one along it would be much more expensive.

Thursday, September 13th.—Ran down to Wilson's Landing, a distance of about 7 or 8 miles; passed several rapids, which would be bad for steamboat navigation, and lines would be required to get steamers over them. There is a steep, rocky bluff on the left bank of the river, a short distance above Wilson's Landing, and would be expensive to take a road around. I took the latitude of Wilson's Landing, which I made $51^{\circ} 40'$ N. I here learnt that the Officer administering the Govern-

ment, the Surveyor General, and Mr. Ball would camp this evening at Kirby's Landing, I therefore ran down the river to that point, where I met them.

(Extract from Report of Mr. Moberly on Illecillewaut River, December 18, 1865.)

On leaving Mr. Turnbull at the mouth of this stream, I proceed up its northerly or right bank, for a distance of about forty miles, at which point the river divides into two streams of nearly equal size, the general bearing of one valley above the forks, as far as can be seen from that point, being north 14° east; that of the other nearly east. The latter valley was evidently the one that, judging from its general bearing, would be most likely to afford a pass in the direction wished for. I therefore tried to induce the Indians I had with me, by every possible persuasion, to accompany me all the way across the Selkirk Range, and make for Wild Horse Creek. (The Columbia River Indians would from the first only engage to go as far as the head waters of the Illecillewaut.) All my efforts were, however, unavailing, as they affirmed that if we went on we should be caught in the snow, and never get out of the mountains. As I now found it would not be possible to complete the exploration of the easterly branch so as to arrive at a definite conclusion as to its suitability for a line of road throughout to the Upper Columbia, and as a partial exploration would only be a waste of time and money, for should it be explored throughout at any future time, which I would recommend, the same ground would have to be traversed again, I decided to explore the northerly fork, and accordingly continued my journey, still keeping on the right hand bank until I reached a point about seventy miles from the mouth of the main river. The valley, which had been continually turning more and more to the north, took a decided turn at the above point, its bearing then being nearly N. W., and as the snow, which had been falling on the mountains for several days, was but a short distance above the river bottom, I concluded to return, it being quite apparent that nothing could be gained by a longer continuance in these mountains. I therefore turned back on the 30th of September and reached the head of the Great Shuswap Lake on the 10th of October.

At a distance of about four miles above the forks before mentioned, I entered the slate range, and continued in it the rest of the distance travelled up this stream. These slate mountains are intersected in all directions by innumerable veins of quartz, and on the river banks and bars much hard blue gravel, intermixed with clay, was seen. We hastily washed a few pans of "dirt" which we scraped from the surface of some of the bars, and obtained prospects which Mr. Perry (the Mountaineer), who was with me, pronounced to be 5 cents to the pan. I examined some of the "colors" obtained through a magnifying glass, and when viewed in this manner they appeared to be thick, coarse and with rough edges. It is my impression that good and extensive diggings will be discovered on this stream, and that there is every probability gold-bearing quartz also exists in the slate mountains, through which it flows.

In passing a very clearly defined vein of quartz about five feet in width, I noticed traces of what I thought was silver, I therefore knocked off a few pieces of the rock, which have been assayed at the Government Assay Office here by Mr. F. G. Claudet, and he returns the following result:

Description of Mineral.	Result of Assay.
Argentiferous Galena.	Lead—79.25 per cent. Silver—84 ozs. per Ton of 20 cwt. Gold—Traces.

TABLE OF LATITUDES AND APPROXIMATE LONGITUDES.

COLUMBIA RIVER.					
	Latitude N.			Longitude W.	
	°	'	"	°	'
Depot Camp.....	51	25	15	118	35 00
Ille-cille-waut River.....	50	58	48	118	26 00
Slough above Upper Arrow Lake.....	50	44	17	118	15 00
Head of Upper Arrow Lake.....	50	40	29	118	9 00
West end of Lake de Truite.....	50	38	35	117	45 10
1½ miles S. of Ille-cille-waut River.....	50	26	18	118	8 20
About 4 miles N. of the foot of Upper Arrow Lake.....	50	11	20	118	6 50
East end of Capt. Houghton's route.....	49	50	20	118	15 40
East bank of Lower Arrow Lake (centre of do.).....	49	36	35	118	12 50
Lower Arrow Lake, 4 miles W. of Kootenay River.....	49	19	52	117	45 00
Fort Shepherd.....	49	1	20	117	36 20

WILD HORSE CREEK ROUTE.					
Kootenay Ferry.....	49	10	36	116	35 30

KOOTENAY LAKE.					
About 10 miles N. of Kootenay Ferry.....	49	19	58	116	40 00
2 miles N. of Kootenay River.....	49	38	52	116	52 00
10 miles S. of head of Lake.....	50	1	17	116	50 50
West end of Kinbasket's trail.....	50	13	18	116	55 50

J. TURNBULL.

TABLE OF APPROXIMATE ALTITUDES ABOVE THE SEA.

ROUTE TO OKANAGAN.		Feet.
Kamloops.....		812
The Summit, 5 miles from the Thompson River.....		1746
Four miles west of the Grande Prairie.....		2614
Grand Prairie.....		1450
Salmon River crossing.....		1274
Okanagan Lake (head).....		1088

ROUTE TO CHERRY CREEK.		Feet.
1st crossing of Shuswap River.....		996
2nd do. do.		1181
Cherry Creek Silver Mine.....		1745
do at east and south branches.....		2580
The summit (estimated).....		3380

	FEET.
The Columbia at end of Captain Houghton's route	1094
Eddy camp, 2 miles S. of Little Dalles, Columbia R.	1210
Kashesilwha Lake	2320
Fort Shepherd	996

WILD HORSE CREEK ROUTE.

Creek, 5 miles from Shepherd	1586
12-mile House	1610
3 miles east of Salmon River crossing	3000
2 miles below do do (at slough)	1726
2 miles west of Kootenay summit	4816
The Summit	6200
Crossing of Creek, 6 miles east of Summit	3616
Cayoosh Creek	2419
Kootenay Ferry	1274
Kootenay Lake	1260
On trail, at junction of Salmon River and the Pend d'Oreille	1832

TRAIL BETWEEN FORT SHEPHERD AND OSOYOOS LAKE.

Sheep Creek Mountain	4260
" Valley	1750
Summit between Sheep Creek and Christiana Lake	4660
Christiana Lake	996
Inch-woin-ton River crossing	1318
Summit between Inch-woin-ton and Boundary Creek	4028
Boundary Creek	1840
Rock Creek	1900
Osoyoos Lake	795
Okanagan Lake (at Mission)	1108

J. TURNBULL.

BAROMETER READINGS.

ON TRAIL FROM HEAD OF N. W. ARM, SHUSWAP LAKE, TO COLUMBIA.

Hudson's Bay Post, Shuswap Lake	28.31
1st crossing, large creek, 11 miles from lake	27.78
2nd crossing, on bar, 19 miles	27.38
3rd crossing, 21½ miles	27.15
1st small lake, 26 miles	25.45
do do	25.38
Divide Lake, 30 miles	24.28
do do	24.18
Columbia River, 40 miles, at camp	27.80

ON COLUMBIA RIVER FROM DEPOT CAMP TO ISLAND, HEAD
OF UPPER ARROW LAKE.

At mouth of Cairne's Creek	27.93
1 mile below Little Dalles	28.00
Island at upper end of Arrow Lake	28.04

ON TRIP FROM THE EDDY, COLUMBIA RIVER, TO THE EAGLE CREEK.

At the Eddy	28.28
Point where struck the Eagle Creek	28.05
Lake of Three Valleys	28.01
Camp, 2d Lake above Lake of Three Valleys	27.93
do do do	27.84

3rd Lake	do	do	.....	27.83
On Divide	.....			27.80
In Eddy	.....			28.10

ON TRIP FROM SHICK-MOUSE UP EAGLE RIVER AND TRIBUTARY
TO POINT A.

Island at mouth of Eagle Creek	.....			28.70
do	do	.....		28.64
8 or 10 miles from mouth, camp 3	.....			28.51
do	do	.....		28.43
15 or 16 miles (direct course), camp 4	.....			28.41
do	do	.....		28.38
20 do	do	camp 5	.....	28.30
do	do	.....		28.30
25 do	do	camp 6 and 7	.....	28.05
do	do	.....		28.05
do	do	.....		28.19
do	do	.....		28.00
30 do	do	Point A, (the point reached from Col. R.)	.....	27.96
Forks of Eagle Creek and tributary	.....			28.44
Camps 3 and 8	.....			28.79
do	.....			28.79
Shuswap Lake	.....			28.81
do	.....			28.80

W. MOBERLY.

TABLE OF LATITUDES.

STATIONS SHEWN ON THE OFFICIAL MAP.

Fort Shepherd	.....	49	1	7
Wild Horse Creek	.....	49	38	51
Small creek, one mile north of Columbia Lake,				
east bank Columbia River	.....	50	19	55
Kinbaskit's Crossing	.....	50	47	3
Kinbaskit's Camp (Indian fishery)	.....	50	49	40
Mouth of Kicking Horse River	.....	51	18	19
Mouth of large creek, nearly opposite mouth of				
Bushey River	.....	51	44	45
Island, south end of Kinbaskit Lake	.....	51	54	36
Boat Encampment	.....	52	7	31
Wilson's Landing	.....	51	40	00

The above was taken with a box sextant.

W. MOBERLY.

WITHDRAWN from V. C. C.